

## **REMARKS**

### **Introduction**

Claims 1-84 are currently pending in the application. Claims 1-19, 21-44, 46-50, 53-56, 58-62, 64, 81, and 83 stand rejected for obviousness over Shankar. Claims 20 and 45 stand rejected for obviousness over Shankar in view of Kalkunte. Claims 51 and 52 stand rejected for obviousness over Shankar in view of Williams. Claims 57 and 63 stand rejected for obviousness over Shankar in view of Bare. Claims 65-80, 82 and 84 stand rejected for obviousness over Shankar in view of Lou.

### **Some preliminaries**

In response to par. 1 of the Office Action, replacement drawings 2, 11, 18 and 21, with descriptive text labels, are enclosed. Therefore, this objection has been overcome.

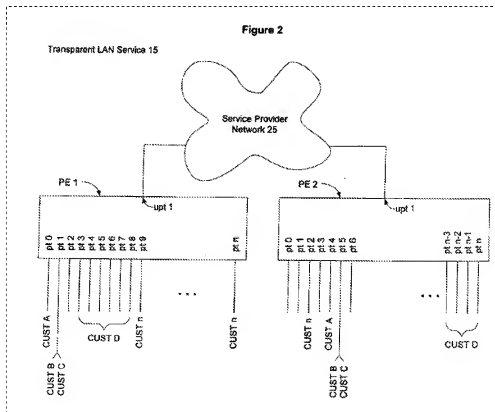
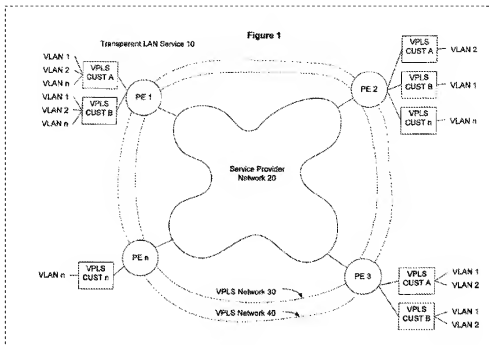
In response to par. 2 of the Office Action, claims 55 and 61 have been amended to clarify that LUT stands for “lookup table.” Applicant submits that this amendment does not change claim scope, given the clear teachings of the specification about the meaning of LUT. (*See, e.g.*, page 13, lines 11-13). Therefore, this objection has been overcome.

In response to pars. 4-5 of the Office Action, claim 53 has been amended to cure the antecedent basis problem. Thus, the indefiniteness rejection of claims 53-58 should be withdrawn.

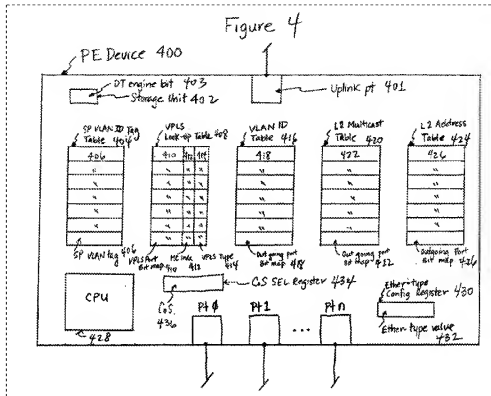
### **The Examiner’s position re: adding backplane connections to Shankar**

At page 3, the Examiner concedes that Shankar does not disclose backplane connections, but argues it would have been obvious to add backplane connections to Shankar. Applicant cannot agree that it would have been obvious to connect the Provider Edge (“PE”) devices shown in Figs.1-2 of Shankar, reproduced below, with backplane connections. As Shankar indicates, those connections connect geographically dispersed sites. (*See* Shankar, pars. 29, 35). Shankar states that one of its purposes is to provide these connections “using the fast growing Internet infrastructure.” (*Id.* at par. 4). As page 7, line 21, to page 8, line 3, of the subject application makes clear, however, a backplane connection is generally a connection that does not function as a user interface, and also typically comprises connectors or traces on a printed circuit board or the like. It

would have defeated the purpose of Shankar to replace these Internet-type connections with backplane connections.

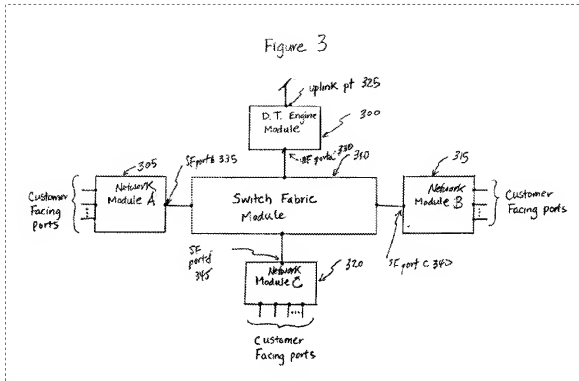


Moreover, it would not have been obvious to employ backplane connections in the PE device 400, shown in Fig. 4 of Shankar, reproduced below:



Shankar teaches that this particular configuration is “an integrated, modular and single chip solution.” (*Id.* at par. 40). Such a configuration would have no need of backplane connections.

The only configuration in which it would at least have been arguably obvious to employ backplane connections is within the PE device shown in Fig. 3, reproduced below:



This configuration comprises the following discrete modules: network module A, network module B, network module C, switch fabric module, and double tagging (“D.T.”) engine module 300. (*Id.* at par. 37). The network modules A, B and C appear on the same chip, and are coupled to the switch fabric module through SF ports b, c, d. (*Id.* at par. 38). The DT engine module is coupled to the switch fabric module through SF port a. (*Id.* at par. 37). Only in this configuration, for the purpose of connecting the switch fabric module to the other modules, would it have been arguably obvious to utilize backplane connections.

With that as a backdrop, the prior art rejections will now be addressed.

### Independent Claims 1, 24, 81 and 83

In response to pars. 6-10 of the Office Action, independent claims 1, 24, 81 and 83 have each been amended to overcome the obviousness rejection based on Shankar.

Consider claim 1. As amended, that claim reads (with additions shown in underlining):

“A system for communicating proprietary control information over one or more backplane connections, interconnecting two or more entities without functioning as a user interface, comprising:

first logic for storing the proprietary control information within a layer of a packet above the physical layer; and

second logic for communicating the packet, including the proprietary control information, over one or more of the backplane connections,

wherein the proprietary control information either replaces or appears in the packet as at least a portion of one or more standard packet fields.”

The requirement that the control information be proprietary is supported, for example, by pages 17, lines 15-22. The requirement that the backplane connections interconnect the two or more entities without functioning as a user interface is supported, for example, by page 7, lines 21-22. The requirement that the control information either replaces or appears as at least a portion of one or more standard packet fields is supported by Figs. 14-15, and related text at page 19, lines 3-5, and page 20, line 8-page 21, line 25.

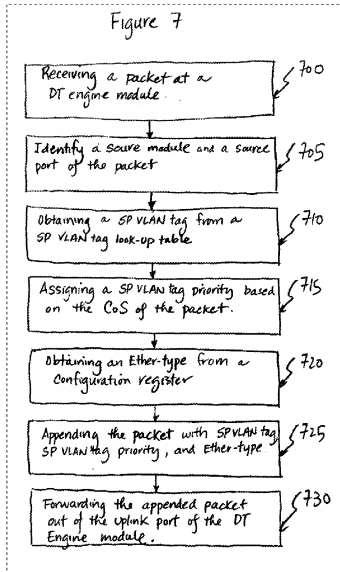
Regarding the “appearing” prong, in one implementation of Fig. 14, the control information, the DID data field 1410, appears as a standard VLAN field because the DID op code field 1408 is set to the VLAN op code so that third party devices will recognize the DID as a VLAN. (*See* page 19, lines 3-5). As a result of this, a third party device will not easily be able to “hack” into this information to obtain access to the proprietary control information. That is because this information will be disguised, and appear to a third party device as a standard packet field.

Regarding the “replacing” prong, in Fig. 15, the DID op code field is eliminated, and the DID data field 1508 overwrites the VLAN op code field. (*See* page 21, lines 20-24). As a result of this, the packet can be transmitted in-band, *i.e.*, no additional clock cycles will be required to transmit the control information. (*See* page 21, lines 24-25).

Turning to Shankar, the Examiner apparently considers the VLAN ID tag, referred to in par. 43, to correspond to the claimed control information, but it does not because this information is not proprietary control information as required, and nothing in par. 43

indicates it is inserted by the PE device of Fig. 3 as opposed to being previously inserted before receipt by the PE device of Fig. 3.

Moreover, the action of the D.T. engine module, in adding the SP VLAN to the packet, as depicted in box 725 of Fig. 7, reproduced below, does not satisfy claim 1 because the SP VLAN does not represent proprietary control information. Furthermore, after the SP VLAN is added to the packet, as box 730 states, the packet is then forwarded out of the uplink port of the D.T. engine module. Referring to Fig. 3 above, that uplink port is coupled to an Internet connection not a backplane connection. Thus, the SP VLAN, once added, is not forwarded over a backplane connection, which, as discussed, would only be arguably obvious to use in connecting the switch fabric module to the other modules of Fig. 3.



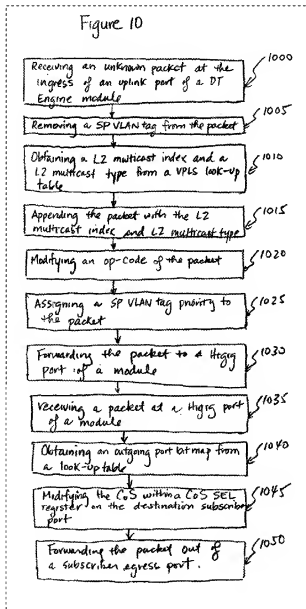
Accordingly, neither par. 43, nor the flowchart of Fig. 7, meet the following limitations of claim 1:

“first logic for storing the proprietary control information within a layer of a packet above the physical layer; and

second logic for communicating the packet, including the proprietary control information, over one or more of the backplane connections,

wherein the proprietary control information either replaces or appears in the packet as at least a portion of one or more standard packet fields.”

Turning to Fig. 10, reproduced below, although the L2 multicast index and L2 multicast type, referred to in box 1015, more closely corresponds to the claimed proprietary control information, that information, once added to the packet, does not replace or appear in the packet as at least a portion of one or more standard packet fields.



As box 1015 makes clear, this information is simply appended to the packet. Nothing suggests overwriting a standard packet field, such as the SP VLAN field, with this information. Moreover, nothing suggests modifying this information so that it appears as



a standard packet field. Therefore, Fig. 10 does not meet the following limitation of claim 1:

“wherein the proprietary control information either replaces or appears in the packet as at least a portion of one or more standard packet fields.”

Nothing else in Shankar (or any of the secondary references for that matter) teach or disclose this limitation. Shankar does not provide the benefits of the claimed invention in terms of making it difficult for hackers to gain access to proprietary control information or in providing in-band communication of control information. Therefore, claim 1 is allowable over Shankar and each of the secondary references, considered singly or in combination. So are claims 2-23, which depend, directly or indirectly, from claim 1. So are claims 24, 81, and 83, which recite the same or similar limitations as claim 1. So are claims 25-52, which depend, directly or indirectly, from claim 24. So is claim 82, which depends from claim 81. So is claim 84, which depends from claim 83.

#### **Independent Claims 53, 59**

Regarding claims 53 and 59, these claims have also been amended to patentably distinguish over Shankar and the secondary references. As amended, claim 53 recites (additions underlined):

“A system for performing load balancing over a plurality of backplane connections between two or more entities, the system comprising:

first logic for receiving a packet at a first entity, mapping control information for the packet into one or more identifiers of one or more of a plurality of backplane connections coupling the first entity to a second entity, wherein the mapping occurs through a data structure configured to achieve a desired load balancing of packets over the plurality of backplane connections; and

second logic for communicating the packet over the identified one or more backplane connections.”

The amendment requiring that the data structure be configured to “achieve a desired load balancing of packets over the plurality of backplane connections” is supported, for example, at page 24, lines 12-14. Claim 59 has also been amended to add this limitation as well.

In par. 9 of the Office Action, the Examiner concedes this limitation is unmet by Shankar, but claims it is met by Bare, and that Bare is combinable with Shankar. However, that is incorrect, because Bare's teachings regarding load balancing are limited to balancing loads over switch-to-switch connections. (See, e.g., Bare, par. 28). Bare teaches absolutely nothing about balancing loads over intra-switch connections, such as backplane connections. Nor does Shankar. Even assuming for the sake of argument the connections between the modules shown in Fig. 3 of Shankar are backplane connections, nothing in Shankar teaches or suggests applying load balancing policies to these connections. Moreover, in any combination of Bare and Shankar that might ensue, based on the teachings of Bare, load balancing would, at most, be applied to the PE-to-PE connections shown in Figs. 1 and 2 of Shankar, not to the intra-switch, module-to-module connections shown in Fig. 3 of Shankar.

Based on the foregoing, neither Shankar nor Bare, considered singly or in combination, meet the following limitation of claim 53:

"first logic for receiving a packet at a first entity, mapping control information for the packet into one or more identifiers of one or more of a plurality of backplane connections coupling the first entity to a second entity, wherein the mapping occurs through a data structure configured to achieve a desired load balancing of packets over the plurality of backplane connections;"

Consequently, claims 53, 59 are patentable over Shankar and Bare, considered singly and in combination. So are claims 54-59, which depend, directly or indirectly, from claim 53. So are claims 60-72, which depend, directly or indirectly, from claim 59.

#### **Independent claims 65 and 73**

In par. 10 of the Office Action, the Examiner concedes the limitation of these claims, requiring "a first switch coupled to a second switch and having a greater number of ports than the second switch," is unmet by Shankar, but claims this limitation is met by Lou, which, according to the Examiner, is combinable with Shankar. However, that position is incorrect, because the cited portion of Lou, Col. 30:20-25, shown below, does not come close to meeting this limitation:

Other embodiments of the power line termination module may include a greater number, or a lesser number of ports. Each port of the port interface 2512 implements a particular VLAN domain. VLAN operations and administrative operations are enabled by a plurality of software instructions that are executed by the power line termination module 2202.

As shown, that passage merely discloses varying the number of ports on a single switch. It says nothing about coupling a first switch to a second switch, with the first switch having a greater number of ports than the second switch, as required.

Therefore, claims 65 and 73 are allowable over Shankar and Lou, considered singly and in combination. So are claims 66-72, which depend, directly or indirectly, from claim 65, and claims 74-80, which depend, directly or indirectly, from claim 73.

#### **Conclusion**

For all the foregoing reasons, Applicant believes that the application is in condition for allowance. Accordingly, the Examiner is earnestly solicited to allow all claims and pass this application to issuance. Early notification of allowance is earnestly solicited.

Respectfully submitted,

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